Economics of the thoroughbred racehorse industry in Arizona

ECONOMICS OF THE THOROUGHBRED RACEHORSE INDUSTRY IN ARIZONA

by

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ABSTRACT

There is a growing awareness among elected state officials of the social need of industries offering recreational services to local citizens. In the State of Arizona the operation and sponsorship of pari-mutuel horse racing has been a significant contributor in fulfilling this growing social demand by local citizens for recreational alternatives. However, associated with the recreational aspects of pari-mutuel horse racing are employment and business activities deriving from the racing and breeding of equine stock, which are important stimulators of the local economy.

The intent of this thesis is to describe the structure of the thoroughbred breeding and racing industries in Arizona, and to measure the financial characteristics of these industries. Capital investment and cost of operation data are presented to illustrate the economic parameters associated with the thoroughbred racing industry.

Results from the economic survey of the thoroughbred racing industry showed that tax revenues paid on the pari-mutuel handles at Arizona's racetracks are only one of the economic assets associated with thoroughbred racing in the state. Millions of dollars have been invested in land facilities and stock by Arizonans to support the state's horse racing program.

CHAPTER I

INTRODUCTION

Situation

Pari-mutuel wagering on thoroughbred racing has become a popular pastime for many Arizonans and winter visitors. Attendance figures at Arizona Downs/Turf Paradise, Inc., Phoenix and Prescott Downs, Prescott reached 325,000 during the 105 days of racing scheduled for the 1968-69 season (Arizona Racing Commission, 1969, pp. 10, 11, 12). Meanwhile, interest in pari-mutuel horse racing was rekindled in Tucson, Arizona. Under the auspices of the Southern Arizona International Livestock Association (S.A.I.L.A.), the Rillito Racetrack opened for 22 days of racing during January-March 1971.

The economic significance of horse racing to the state has traditionally focused on the size of pari-mutuel handles, since these monies supply the source of the tax revenues paid by the racing industry. These tax revenues are collected by the State Racing Commission and deposited into the state treasury pursuant to Chapter 61 Arizona Revised Statutes, established in 1949 by action of the Legislature. For the years 1965 to 1969 the annual tax revenues collected by the State Racing Commission climbed from 854,042 dollars to 997,220 dollars (Arizona Racing Commission, 1969, pp. 2, 10, 11, 12, 13).

Tax revenues on pari-mutuel wagering, however, are only the end product of the economic interaction of the horse breeding and racing sectors of the industry. Economic spin-offs result from the existence and operation of each sector. Little information is available to the public and state government agencies describing these other economic contributions the breeding and racing sectors make to Arizona. Only the participants in the horse racing industry have had an appreciation of the significance of these industries on regional economies.

The importance of documenting the total economic impact of the pari-mutuel horse industry at the regional as well as on the national level was expressed by the National Association of State Racing Commissioners. In the Constitution of the National Association of State Racing Commissioners an objective reads: "1. (f) To assemble and to disseminate pertinent information and data concerning racing for the improvement of the service rendered to the public by this Association and for the benefit and guidance of the state boards and commissions" (National Association of State Racing Commissioners, 1943, p. 4).

Consequently, the results of an economic study on pari-mutuel thoroughbred racing in Arizona will document its significance on the regional economy of Arizona and help accomplish the purposes set out in the Constitution of the National Association of State Racing Commissioners.

Review of the Material

A comprehensive study of the pari-mutuel horse racing industry was first undertaken by the Stanford Research Institute (S.R.I.), Menlo

Park, California in January 1965. This study was sponsored by the State of California with financial assistance from various racing associations, breeder groups, and related interests in horse racing industries in California. The stated objectives were to study the economics of the horse racing industry in the state and formulate from this data sound guidelines for public policy concerning the industry.

The areas of research covered by S.R.I. included a (1) analysis of the nature, size, and characteristics of the market for various types of horse racing in California; (2) evaluation of the future changes in the size and characteristics of these markets; (3) analysis of the nature, size and characteristics of the existing demand for horses and other services supporting the horse industry; (4) analysis of the patterns of costs, revenues, and profitability of the horse breeding and racing industries in California; (5) evaluation of the future profitability of the horse breeding and racing industries; (6) evaluation of the estimated impact of the tax revenues to the state that would result from alternative combinations of allocations of racing days and alternative combinations of allocations of racing days and alternative levels and structure of taxes on pari-mutuel wagering; (7) evaluation of the economic effects on tax revenues to the State of California arising from the current allocation of racing days and the current level and structure of state taxes. Results of these specified research areas were published in the study entitled An Economic Analysis (Stanford Research Institute, 1965).

In 1968, the Thoroughbred Owners and Breeders Association commissioned David Novick Associates to design a national study plan of the economics of pari-mutuel racing. The objectives stated in the Novick study plan were to provide a framework in which regional data could be collected, and to formulate from the collected data a national economic picture of the racing industry.

Specific survey plans were formulated to study each segment of the pari-mutuel industry. Procedures were developed to obtain needed financial information of the breeding, training and racing of equine stock. Plans were also constructed to obtain financial information on the operation of licensed racing associations which sponsored pari-mutuel wagering. Special attention was paid to collecting data on the amounts wagered and the wagering characteristics of the betting public on a daily basis. Additionally, methods to collect demographic data for state and market areas were formulated in the Novick study plan.

The Novick Associates study entitled The Economics of Pari-Mutuel Racing was published in February 1969, and distributed to interested parties in the racing industry. This plan was recognized by the National Association of State Racing Commissioners as an important contribution to the efforts by the horse racing community to ascertain the economic impact of pari-mutuel horse racing on local and regional economies.

Pursuant to a program instituted by the National Association of State Racing Commissioners to support a national effort to analyze the economics of pari-mutuel horse racing, the Commonwealth of Kentucky

initiated a study of its horse racing industry in the spring of 1968. Spindletop Research, Lexington, Kentucky was commissioned by the State Racing Commission of Kentucky, Kentucky Trotting Commission, Kentucky Quarter Horse Racing Commission, and the Kentucky Development Office to conduct a study of the racing industries.

The results of the economic study of the thoroughbred, quarter-horse, and trotting racing industries were published in the fall of 1971. Data was assembled to illustrate the cash flow within the economic system of the racing industries. Expenditures and revenues were logged as they moved among racing associations, racing commissions, race horse owners, race horse breeders, trainers, riders, agents, and local suppliers of goods and services. Upon completion of this economic cycle, these monies measured the economic impact of the pari-mutuel racing industries on the local service business sector, tourist business sector and the local, state, and federal governments.

An economic impact study of the horse industry of New Mexico was completed by the Bureau of Business Research, a division of the Institute for Social Research and Development, The University of New Mexico (1970). This study was patterned after the study plan prepared by David Novick Associates (1969). Its areas of study covered the investments and costs of racing activities in the state, and the attendance and wagering characteristics of the betting public.

Efforts to compile comprehensive data on the investments and costs to breed, train, and race equine stock were stymied by a lack of

cooperation from New Mexican horsemen. As a result, response to the economic survey was disappointing. Consequently, estimates on the financial characteristics of breeding, training and racing equine stock were based on limited data.

A more extensive analysis, however, was presented on the pari-mutuel operations of State Racing Associations. Financial data were presented on the investment and operating costs of racing associations. These investments and expenditures in turn supplied the data to measure the economic impact of pari-mutuel racing associations on the economy of the state. In addition to the economic impact analysis, comprehensive data were compiled on the attendance and wagering characteristics of the betting public. Average daily attendance, average daily handle, average daily wager per attendee, average daily wager per attendee per race, week-end and holiday attendance, wagering by class of race and type of wager composed the sections describing pari-mutuel betting on horse racing in New Mexico.

Objectives

The purpose of this study is to contribute to the national effort currently under way by the National Association of State Racing Commissioners to ascertain the economic significance and financial impact of pari-mutuel horse racing on the national economy. As a member of the National Association of State Racing Commissioners, the Arizona Racing Commission commissioned the Department of Agricultural Economics, College of Agriculture, The University of Arizona as a regional input to the national survey.

The specific objectives of the regional study plan of pari-mutuel racing in Arizona are:

1. To separate the thoroughbred race horse industry into sectors to identify its physical characteristics.
2. To conduct a census survey of the thoroughbred breeding, training, and racing stable industries to identify the number, size, and classifications of enterprises operating in the State of Arizona.
3. To measure the typical costs and capital investments needed to operate thoroughbred breeding, training, and racing stable enterprises in the State of Arizona.
4. To describe the money flows within the breeding, training, and racing sectors of the thoroughbred race horse industry.
5. To measure the total value of capital investments in the thoroughbred breeding and racing stable industries of the State of Arizona.
6. To measure the expenditures to maintain and operate the thoroughbred breeding and racing stable industries of the State of Arizona.

CHAPTER II

PROCEDURES AND METHODOLOGY

The procedures followed in this study to describe and evaluate the economic characteristics of the thoroughbred breeding and racing stable industries of Arizona were based on cost and investment budgeting techniques. Cost and investment budgets were developed to describe the financial operations of breeding and racing stable enterprises from the survey data collected in the fall of 1970 and the spring of 1971. Each of these financial budgets thereby supplied the statistical estimators to determine the aggregate cost and investment levels of the thoroughbred industries of Arizona.

Sampling and Stratification of Population

The Arizona Thoroughbred Breeders Association, The Horsemens' Benevolent and Protective Association, and the Arizona Racing Commission supplied names of Arizona horsemen which provided the basic population frame for the economic survey of the state's breeding and racing industry. Questionnaires were sent to 502 individuals to determine the type and size of thoroughbred enterprises in operation (Appendix A, Horse Census). A 27 percent overall response was obtained. However, when inactive individuals were eliminated, the response measured 43 percent of the total number of thoroughbred enterprises operating in the state during 1970 - 1971.

Each respondent was classified as a breeding operation, breeding-racing operation, or racing operation. While the respondents were classified by type of operation, each operation was also classified by size. The size groupings were based on the number of head maintained by each respondent. The smallest size group represented thoroughbred breeding, racing or breeding-racing enterprises maintaining 0 to 5 head. The other size groups represented enterprises maintaining 6-10 head, 11 to 25 head, and over 25 head.

Once the respondents were classified by type and size, questionnaires were developed to compile financial data on the capital investments and expenditures to operating a breeding farm and racing stable during 1970 - 1971 (Appendix A, Economic Questionnaire). Due to the large inventory of capital investments and the extensive list of operating costs of the larger breeding and racing enterprises, personal interviews were sought to collect financial information from enterprises maintaining over 10 head. The smaller breeding and racing operations were mailed questionnaires to collect relevant financial data (Appendix A, Mail Questionnaires).

A 100 percent response to the economic questionnaire was obtained from those breeding enterprises maintaining over 25 head which responded to the initial census questionnaire. Financial data was collected from 55 percent of those responding breeding farms maintaining 11 to 25 head. Response to the financial questionnaire mailed to smaller operations dropped to 30 percent of those breeding enterprises maintaining 6 to 10 head and 20 percent for operations of under 5 head (Table 1).

Table 1. Response of Thoroughbred Breeding Enterprises to the Economic Survey.

Size of Enterprise	Census Survey Number Respondents	Financial Survey Number Respondents
0-5 head	37	9
6-10 head	20	6
11-25 head	20	11
Over 25 head	9	9

Response to the economic survey of thoroughbred racing stable enterprises totaled 48 percent of those operations replying to the original census survey. The highest response level was recorded for operations in the 11-25 head classification. However, in total number of financial questionnaires completed, enterprises stabling less than 5 head measured the highest with a total of ten (Table 2).

Table 2. Response of Thoroughbred Racing Stables to the Economic Survey.

Size of Enterprise	Census Survey Number Respondents	Financial Survey Number Respondents
0-5 head	24	10
6-10 head	15	8
11-25 head	7	4
Over 25 head	--	--

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Thoroughbred Breeding Farms

Capital Investments

Capital assets of thoroughbred breeding enterprises presented in Chapter III were categorized as land, buildings and improvements, equipment and stock. Land represented the acreage owned by breeding firms which was used as pasture or grounds composing paddocks, barns, and training track areas. Buildings and improvements were itemized as barns, feed storage facilities, equipment storage facilities, fencing, paddocks, training tracks, and irrigation systems. Equipment included vehicles, trailers, tractors, machinery, tack and miscellaneous tools (Appendix A, Economic Questionnaires). The inventory of thoroughbred stock was composed of broodmares, stallions, yearlings, colts, and retired stock.

Current dollar values on the inventory of capital assets were requested from each of the surveyed breeding enterprises. These values were totaled for each asset category by size of operation. This accounting procedure developed statistics on the value of capital investments of a typical breeding enterprise within each size classification.

A number of surveyed enterprises were unable to place realistic values on land, buildings, improvements and equipment. Consequently, simple accounting procedures were developed to estimate current value levels for these capital assets.

Synthesized Investment Levels. Land owned by breeding firms was valued whenever possible, according to local real estate listings. These listings represented a more realistic estimation of the true market value

of parcels of land. Interviews were conducted with real estate agencies which operated in locations surrounding breeding farm locations to ascertain general land values. However, on occasions current market values could not be calculated for some breeding operations. For these operations, information was collected from the 1970 appraisals of the full cash value for land by the County Assessor's Office.

Valuations on buildings were calculated from the construction cost schedules published in the Rural Construction Cost Manual, (Department of Property Valuations, State of Arizona, June 1970). Each facility was first divided according to its constructional components (foundation, exterior walls, roof, interior walls, floor, and miscellaneous items). Information was collected on the dimensions of these components, and material characteristics of these components. Following this structural breakdown of the facility, it was valuated at 1970 replacement costs.

Given the replaced cost of the facility with the standard 18 percent salvage value, and 25 year life span, the current value of the facility was derived once its age was determined. Calculation of investments in improvements was achieved by determining the material and dimensional characteristics of the improvement assets. Once a general description of the improvements was obtained, interviews were conducted with private business firms specializing in the construction of the particular improvements to determine their values.

Investment in fencing, for example, were calculated by determining the standard paddock area and the costs of installing various types of fencing material around this area.

The section of the economic questionnaire dealing with the investments in fencing was designed to record the number of paddocks in use and the land area which they covered (Appendix A, Economic Questionnaire). This information was synthesized to determine the average sized paddock in square feet. These areas were transformed into linear measurements from which the amount of fencing material in use could be interpolated.

Cost data on fencing material were collected by interviewing commercial firms which specialized in the installation of fencing. This cost data, combined with the linear foot measurements of each paddock, established an estimate of the replacement value of investments in fencing improvements.

Book value estimates were made by reducing the replacement value by its estimated salvage value. The salvage value for fencing and other improvements, however, was placed at zero since these improvements have minimal resale value. Often fencing and similar investments have negative resale value because of the cost of removal and disposal.

Similar procedures were followed in determining valuations for capital investments in irrigation systems, sun shades, protective sheds, and other improvements utilized by breeding farms in their daily operations. Information was collected on the physical characteristics of the improvement; replacement valuations were made following interviews with commercial businesses to ascertain cost of construction; and present value estimates were calculated.

Data on the value of equipment was interpolated from the inventories given in the response to the economic survey. Information

was logged on the type, age, and description of the equipment. Given this physical description of equipment items, current value estimates on the investment in vehicles was calculated using the Kelly's Market Report--Blue Book Automobile and Trucks, Nov.-Dec. 1970. Further current value estimates were obtained from unpublished literature on replacement costs, depreciation rates, and current value levels of farm machinery compiled by the Department of Agricultural Economics, College of Agriculture, The University of Arizona (1970). Information on investments in tack, tools, and miscellaneous material, however, was scarce. Therefore, current value estimates of these items were limited to replacement levels.

Aggregate Capital Investment Levels

The first step in determining the investment levels of the industry was to identify the size characteristics of the population of Arizona Breeder enterprises. This was achieved by utilizing the sample data from the census survey of the breeding industry. Sample statistics were graphed according to size of operations in order to study the samples frequency characteristics. Examination of the sample graph indicated that the distribution exhibited hyperbolic characteristics (Figure 1). Since an overall response of 47 percent was obtained in the survey, it was assumed that population distribution was characteristic of the sample distribution.

The statistics identifying the frequency distribution according to size of operations were used as estimates of the population parameters.

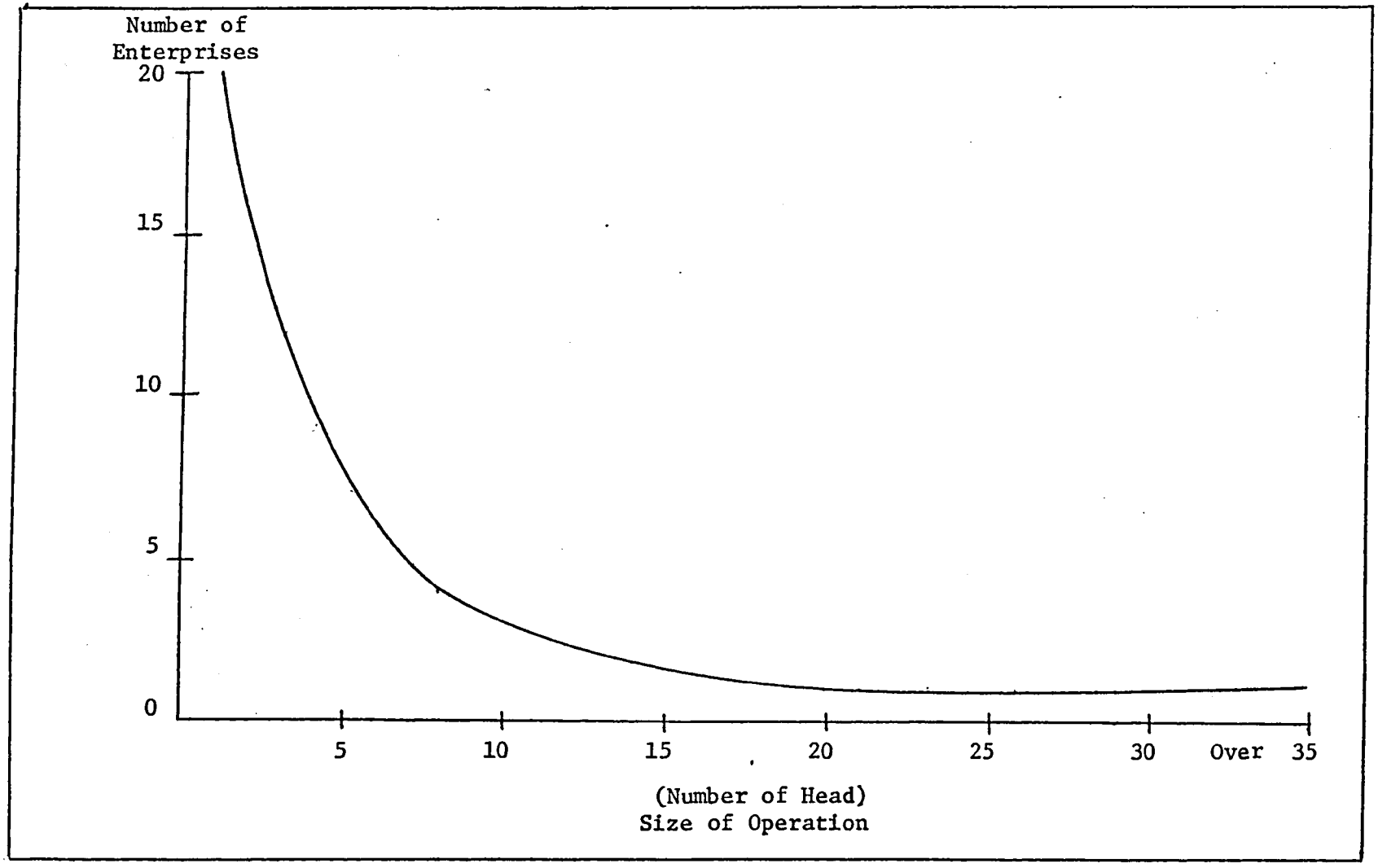

Figure 1. Sample Distribution of Thoroughbred Breeding and Racing Enterprises in Arizona by Size of Operation

Thus 55 percent of the total number of firms in operation maintained 5 head or less, 26 percent maintained 6 to 10 head, 13 percent maintained 11-25 head and 6 percent maintained over 25 head.

The average capital investment figures of the four size classification derived from the economic survey of states' breeding firms supplied the financial data to determine the aggregate capital worth. This financial data combined with estimates of the total number of breeding firms within each size classification formulated the data to determine total capital investment levels of the industry. Hence, the number representing 55 percent of the total number of breeding firms in operation combined with the average capital investment level of firms maintaining 0 to 5 head, measured the aggregated capital worth of operations in the 0 to 5 head classification. Correspondingly, the number representing 26 percent of the total number of breeding firms in operation combined with the average capital investment level of firms maintaining 6 to 10 head, measured the aggregated capital worth of operations in the 6 to 10 head classification. This procedure was continued to determine the aggregate investment worth of operations in the 11 to 25 and over 25 head size classifications. The summation of the total value of capital investment in each size classification supplied the estimated total worth of capital assets in the thoroughbred breeding industry in Arizona.

The following description illustrates the statistical calculation of the total worth of the capital investments of the thoroughbred breeding industry for 1970.

$$\text{Total Capital Investment of Industry, 1970} = \sum_{i=1}^{4} P_{x_i} (N) [I_{x_i} [$$

where: P_{x_i} = proportion of total number of breeding enterprises in size group i.

$$\sum_{i=1}^{4} p_{x_i} = 1, \quad P_{x_i} = .55, \quad P_{x_2} = .26, \quad P_{x_3} = .13, \quad P_{x_4} = .06$$

x_1 = firms maintaining 0 to 5 head

x_2 = firms maintaining 6 to 10 head

x_3 = firms maintaining 11 to 25 head

x_4 = firms maintaining over 25 head

N = total number of thoroughbred breeding operations in Arizona

I_{x_i} = total capital investment per firm size i

$$I_{x_i} = I_{L_{x_i}} + I_{B_{x_i}} + I_{E_{x_i}} + I_{S_{x_i}}$$

where: $I_{L_{x_i}}$ = capital investment in land

$I_{B_{x_i}}$ = capital investment in buildings and improvements

$I_{E_{x_i}}$ = capital investment in equipment

$I_{S_{x_i}}$ = capital investment in stock

Costs of Operation

The cost structure of the thoroughbred breeding enterprises presented in Chapter III was divided into the accounting components of

fixed and variable costs. Variable costs represented those expenditures which fluctuated according to the number of head maintained at the farm. These included labor, repair, and operating expenditures for farm maintenance, and feed, veterinary, blacksmith, and miscellaneous expenditures for horse upkeep. Fixed costs were those expenditures which remained constant and were independent of the variations in the number of head stabled at breeding farms. Depreciation, taxes, insurance, and stud fees composed the items which represented the fixed cost structure of breeding farms.

Information on the cost structures of breeding farms supplied in the 1970-71 economic survey were constructed into budgets. These budgets represented the typical variable and fixed costs to operate firms maintaining 0-5 head, 6-10 head, 11-25 head, and over 25 head.

Response by the surveyed firms on this variable cost structure was excellent. Complete information was available on labor, maintenance repair, feed, veterinary, blacksmith, operating and miscellaneous expenditures. However, many respondents were unable to record cost levels for many fixed cost items. Depreciation was the primary item omitted. Voids in response were also recorded for the fixed cost items of taxes and insurance. These three major fixed cost categories were, therefore, developed synthetically to complete the cost structures.

Synthesis of Fixed Costs. Depreciation schedules on capital investments in buildings, improvements, equipment, and stock were calculated on a straight line depreciation rate. This straight line rate was computed by determining the net value of each investment item prorated

over its estimated life span. Net value represented the replacement value reduced by a salvage value factor.

The calculation of the replacement costs, salvage values, and life span for investments in buildings was based on the parameters supplied in the Rural Construction Cost Manual (Department of Property Valuations, State of Arizona, June 1970). Salvage levels were placed at standard rates of 18 percent of replacement value and the expected life span was estimated at 25 years.

The depreciation schedule for investments in improvements were synthesized from data supplied in the Rural Construction Cost Manual (Department of Property Valuations, State of Arizona, June 1970). The salvage value of improvements such as fencing, sun shades, etc., was placed at zero, and their expected life was placed at 50 years.

Depreciation costs on equipment with the exception of tack and miscellaneous tools were taken directly from two major sources. The first source was the Kelly Market Report--Blue Book Automobile and Trucks, Nov.-Dec. 1970. Depreciation rates and cost levels were supplied from this source on most vehicles. Depreciation on farm equipment and machinery was taken directly from unpublished material on cost budgets compiled by the Department of Agricultural Economics, College of Agriculture, The University of Arizona.

No sources of information were available which supplied depreciation schedules on tack and miscellaneous equipment (tools, cleaning equipment, etc.). Therefore, a depreciation formula was developed to determine these costs. A salvage value of 50 percent and a life

expectancy of 5 years was chosen after interviews with owners showed these parameters to be realistic estimates.

Depreciation schedules were also calculated for the breeding stock owned by Arizona breeding enterprises. Under current Internal Revenue Service regulations, breeding stock is considered a capital investment which can be depreciated for tax purposes. However, no formal depreciation rate or schedule is applied since vast variations exist between individual values and useful life spans of breeding stock. Consequently, a simple depreciation schedule was developed to measure the typical depreciation costs of breeding stock owned by Arizona horsemen. The current value placed on animal by its owner was depreciated over a life span of 12 years with a zero salvage value

Cost statistics on the state and local property taxes paid by the surveyed thoroughbred owners was synthesized from the tax structure used by the state's County Assessors' offices. Each firm was appraised at its full cash value, which included valuations on land, improvements, farm equipment, and stock inventory. Appraisals for land and improvements were recorded directly from the County Assessors' files for 1970, while valuations for farm equipment and stock inventory were developed from the Countys' appraisal schedules. These schedules valued the firms' stock inventory at a standard full cash rate of $1,000 per stallion and $700 per breeding and racing stock and appraised the equipment on a decreasing depreciation rate.

All valuations were assessed at 18 percent of its full cash appraisal. This registered the net worth from which the taxes were

determined per $100 assessed value. The tax rates per $100 assessed value were combined into an average County tax rate for 1970. Rates were determined for Maricopa County, Pima County, and other counties.

The major livestock insurance firms in Arizona estimated that approximately 10 percent of the thoroughbred population was insured in 1970. Division of the insured stock into breeding and age classifications could not be determined by these agencies; but assuming the ten percent ratio is constant for all classifications, insurance firms probably covered a total of 100 thoroughbred broodstock and colts.

Insurance premiums on thoroughbred stock was assumed at 4.5 percent of the insured value. However, data on the insured values on thoroughbred stock was withheld by the insurance firms. Therefore, the average values for stallions, broodmares, and colts was determined from the Census Survey of Arizona Thoroughbreds conducted by The University of Arizona (Appendix A, Horse Census). Calculation of 4.5 percent of the average value on the 100 insured thoroughbreds nets an expected cost of $20,000. Measuring this total expenditure on a per animal basis shows a cost of $\frac{\$20,000}{\$\ 1,000} = \$20$ for 1970.

Aggregate Total Operational Costs

The procedures followed to determine the aggregate operational costs of the breeding industry were similar to the one utilized to calculate aggregate investment levels. The distribution parameters (P_{x_i}) interpolated from the census sample of Arizona firms were again used to

establish the number of farms within the four size classifications. These statistics represented an estimate of the number of farms maintaining 0-5 head, 6-10 head, 11-25 head, and over 25 head.

The economic survey of the breeding farms supplied the financial data to develop aggregate expenditure levels. Operational costs were logged and compiled into typical cost structure characteristics of each size classification. These cost schedules were weighted by the total number of farms in each size classification to compute the aggregate expenditures of the breeding industry for 1970.

$$\text{Total expenditures of the thoroughbred breeding industry, 1970} = \sum_{n=1}^{4} P_{x_i} (N) [TC_{x_i}]$$

Where: P_{x_i} = proportion of total number of breeding enterprises in operation, 1970 - 1971

$$\sum_{i=1}^{4} P_{x_i} = 1, \; R_{x_i} = .55, \; P_{x_2} = .26, \; P_{x_3} = .13, \; P_{x_4} = .06$$

x_1 = firms maintaining 0 to 5 head.

x_2 = firms maintaining 6 to 10 head

x_3 = firms maintaining 11 to 25 head

x_4 = firms maintaining over 25 head

N = total number of thoroughbred breeding operations in Arizona, 1970 - 1971

TC_{x_i} = total operating costs per size group i

$$TC_{x_i} = VC_{x_i} + FC_{x_i}$$

VC_{x_i} = average total variable costs per size group i

FC_{x_i} = average total fixed costs per size group i

Additional information on the cost structure of breeding farms can be extracted from the preceding equation. Aggregated costs can be computed for variable and fixed cost structures of each size classification as well as compiling financial data on each variable and fixed cost expenditure item. Total expenditures for labor, maintenance and repair, feed, depreciation, etc., for example, can also be logged. These figures are useful in supplying a comprehensive look at the cash flow of monies spent by the breeding industry which entered the state economy.

Thoroughbred Racing Stables

Capital Investments

Capital assets of thoroughbred racing stables presented in Chapter IV were itemized as land, stable facilities, equipment and stock. Land represented the acreage used for stabling racehorses outside the grounds of the state's major racetracks. Stable facilities included the investments in fencing, enclosed stalls, paddocks, and corrals constructed on these privately owned acreages. Equipment was categorized as racing tack, training tack and other preparation items. These listings included exercise and racing stables, stall nets, stall chains, exercise ponies, feed and water buckets, racing and exercise blankets, bridles and shanks. The last investment item represented those thoroughbred horses

in training to race at Turf Paradise Racetrack, Phoenix, Rillito Racetrack, Tucson, and Prescott Downs Racetrack, Prescott.

Values on the current net worth of the four investment items were obtained from direct interviews with racehorse trainers and owners at the three major racetracks during the 1970 - 1971 racing season. Interviews were the primary source of financial data on the investment levels in land, private stable facilities and racing stable equipment. Net valuations on racing stock was compiled from the pooling of data collected by personal interviews and data on the estimated net worths of Arizona racing stock supplied by respondents to the census survey (Appendix A, Horse Census).

The valuations of assets in land, facilities, equipment, and stock were subdivided according to size of racing stable operations. Four size divisions were used to represent the structure of the Arizona racing stable industry. Typical investment levels were determined for operations stabling and training 5 head or less, 6 to 10 head, 11 to 25 head, and over 25 head.

Aggregate Capital Investment Levels

A count of the number of Arizona trainers engaged in managing public and private racing stables was obtained from the official registration records at the racing offices at Turf Paradise, Phoenix and Rillito Track, Tucson. In addition to this count, the number of head handled by each trainer also was logged. Since the number of head in training at each racing stable varied during the season, a census on the number of head handled by each trainer was conducted on three

occasions for stables competing in the Arizona Downs/Turf Paradise season and on two occasions for stables competing in the S.A.I.L.A. sponsored racing season at Rillito Racetrack, Tucson. These counts established the average size of the surveyed racing stables during the entire racing season and supplied the statistics on the structure of the racing stable industry according to the four size classifications.

The statistics on the number of racing stables by size of operation and their corresponding average investment levels were computed to measure the gross capital worth of land, facilities and equipment owned by Arizona racing stables operating at Turf Paradise and Rillito Racetrack, Tucson during the 1970-71 season.

$$\text{(a)} \quad I_{R_{TP}} = \sum_{i=1}^{4} P_{TP_{x_i}} \; (N_{TP}) \; [I_{R_{x_i}}]$$

where: $I_{R_{TP}}$ = total capital investment in land, facilities, and equipment by stables operating at Turf Paradise, Phoenix

$I_{R_{x_i}}$ = total capital investment of a typical racing stable per size group i

$P_{TP_{x_i}}$ = proportion of the total number of racing stables operating at Turf Paradise, Phoenix

$$\sum_{i=1}^{4} P_{TP_{x_i}} = 1$$

x_1 = racing stables training 0 to 5 head

x_2 = racing stables training 6 to 10 head

x_3 = racing stables training 11 to 25 head

x_4 = racing stables training over 25 head

N_{TP} = total number of racing stables operating at Turf Paradise, Phoenix, 1970 - 1971

$$(b)\ I_{R_R} = \sum_{i=i}^{4} P_R x_i \ (N_R) \ [I_R x_i]$$

where: I_{R_R} = total capital investment in land, facilities, and equipment by stables operating at Rillito Racetrack, Tucson.

$I_R x_i$ = total capital investment of a typical racing stable per size group i.

$P_R x_i$ = proportion of the total number of racing stables operating at Rillito Racetrack, Tucson, 1971.

$$\sum_{i=1}^{4} P_R x_i = 1$$

x_1 = racing stables training 0 to 5 head

x_2 = racing stables training 6 to 10 head

x_3 = racing stables training 11 to 25 head

x_4 = racing stables training over 25 head

N_R = total number of racing stables operating at Rillito Racetrack, Tucson, 1971.

Summation of these capital investment levels ($I_{R_{TP}}$ and I_{R_R}) measured the estimated total worth of the racing stable industry's assets in land, facilities, and equipment. Measurement of the investment levels of stables operating at Prescott Down was omitted since the majority of racing stables competing at the Rillito Racetrack during the winter season also operated at Prescott during the summer racing season at Prescott Downs. Thus, a double counting of investment levels was eliminated.

The statistical procedures used to calculate the net worth of racing stock varied from those used to determine the values of assets in land, facilities, and equipment. Valuations on the number of head in training by size of racing stable were not used to determine aggregate levels. Instead, the total populations of thoroughbreds racing at Arizona Downs/Turf Paradise, Phoenix, and Rillito Racetrack (S.A.I.L.A.), Tucson were calculated during the 1970 - 1971 season. This population count weighted by the average values per horse established by the pooling of data from personal interviews and the census survey of Arizona horsemen supplied the estimate of the total net worth of Arizona thoroughbreds competing at Arizona Downs/Turf Paradise and Rillito Racetracks.

Investment estimates were not made for stock racing at Prescott Downs during the summer season of 1970. To calculate this level would be a double counting of investments in racing stock since the majority of stables competing at the Rillito Racetrack moved to Prescott for the summer racing season.

Total investment levels of the racing stable industry was calculated by summing the total investment figures in land, facilities, equipment and racing stock.

Costs of Operation

The cost structure representative of the racing stable industry was composed of expenditures for general horse upkeep at the racetrack and special expenditures to enter and start a horse at the racetrack. The general upkeep expenditures included the variable costs of veterinary

fees, blacksmith fees, and training fees. Training fees covered the costs for animal feed, bedding, replacement of tack and other equipment, licenses, depreciation of equipment, and miscellaneous expenses. The special expenditures to race were jockey fees, commissions, and entry fees. These costs varied according to the finishing position of the horse in a race, as well as the number of starts logged by each thoroughbred during the season.

Cost budgets were developed which represented the typical cost levels to maintain a horse at the three major racetracks in Arizona on a monthly basis.

The financial information used to develop each cost budget was collected from personal interviews conducted at the Turf Paradise Racetrack in Phoenix and the Rillito Racetrack in Tucson. Public and private horse trainers, racehorse owners, and local businessmen operating racehorse equipment stores supplied data on general upkeep costs. Racing costs were compiled from general information on commission percentages paid to jockeys and trainers at the track. Included in costs to race were jockey fees paid to riders based on the contract between the Jockeys' Guild and the Arizona Division of the Horsemens' Benevolent and Protective Association (1969). Also, costs for entry fees were computed from the official entry forms supplied by Turf Paradise and Arizona Downs Racing Corporation.

Aggregate Total Operational Costs

The cost budgets constructed for racehorses stabled at Turf Paradise Racetrack, Phoenix, and Rillito Racetrack, Tucson, supplied

the parameters to determine the total expenditures of the racing stable industry during the 1970 - 1971 racing season in Arizona. Each cost level was multiplied by the total number of head stabled at the Phoenix and Tucson racetracks.

(a) $TC_{TP} = [C_{TP} (N_{TP})] T_{TP}$

where: TC_{TP} = total costs to maintain the thoroughbred racehorse population at Turf Paradise, Phoenix during the November 1970 - April 1971 racing seasons of Arizona Downs/Turf Paradise Inc.

T_{TP} = length of racing season at Turf Paradise -- November 1970 - April 1971 (6 months)

N_{TP} = thoroughbred racehorse population stabled at Turf Paradise

C_{TP} = monthly costs to stable and race a thoroughbred at Turf Paradise

(b) $TC_{R} = [C_{R} (N_{R})] T_{R}$

where: TC_{R} = total cost to maintain the thoroughbred racehorse population at Rillito Racetrack, Tucson during the January 1971 - March 1971 racing season of S.A.I.L.A.

T_{R} = length of racing season at Rillito Racetrack, January, 1971 - March 1971 (3 months)

N_{R} = thoroughbred racehorse population stabled at Rillito Racetrack

C_{R} = monthly costs to stable and race a thoroughbred at Rillito Racetrack.

Total monies paid by horsemen racing their thoroughbred stock at Prescott Downs Racetrack, Prescott, Arizona during the June - September season of 1970 was interpolated from the cost data compiled from the Rillito Racetrack survey. As described in previous sections, a majority

of the racehorses and trainers competed at both the Prescott and Tucson racetracks. Consequently, the cost factors to prepare a thoroughbred to race at each track was very similar. The only variation in the procedure used to determine aggregate cost levels for the thoroughbred racehorse population stabled at Prescott was the length of season. In 1970 the Prescott season included four months of racing while the Tucson season lasted three months.

(c) $TC_P = [C_P (N_P)] T_P$

$$C_P = C_R$$

$$N_P = N_R$$

where: T_P = length of racing season at Prescott Downs Racetrack June 1970 - September 1970 (4 months)

CHAPTER III

THOROUGHBRED BREEDING INDUSTRY IN ARIZONA

Census and Classification

During 1970, an estimated 194 enterprises were engaged in thoroughbred breeding. Approximately 133 of these breeders owned and operated farms to raise and stable their stock. Seventy-five percent of the units specialized in breeding thoroughbreds as a single operation. The other 25 percent were multi-breed operations or agricultural firms such as crop farms or cattle ranches with thoroughbreds as a sideline.

Although farm enterprises dominated, there were a significant number of breeding units that boarded stock. The typical arrangement consisted of a fee for feed and use of facilities. These breeders appeared to have greater mobility in entering or exiting the industry. This mobility created problems in estimating the breeder-boarder population.

Size of Operations

Arizona breeding operations are characteristically small in terms of the number of mares (Table 3). One-half of the breeders had one broodmare and 26 percent had 2 or 3. The operations were classed as small, 1 to 3 mares; medium, 4 to 13; or large, 14 and over.

Table 3. Distribution of Thoroughbred Broodmares per Operator, 1970

Classification of Firm		Percent of the Number of	Cumulative percent of Operators and Mares	
	Mares Owned	Operators	Operators	Mares
Small	1	56.3	50.3	16.5
	2-3	26.00	76.3	33.0
Medium	4-5	10.0	86.3	47.9
	6-7	5.3	91.6	59.6
	8-9	.6	92.2	61.4
	10-11	3.0	95.2	71.9
	12-13	1.8	97.0	78.9
Large	14-15	---	97.0	78.9
	16-17	1.8	98.8	88.3
	18-19	---	98.8	88.3
	20+	1.2	100.0	100.0

The larger breeders owned a substantial proportion of the broodmare population. Breeders with more than 5 broodmares represented 14 percent of the operations but accounted for 52 percent of the animals.

The distribution of operations based on the number of foals produced in 1970 is summarized in Table 4. An estimated 27.5 percent of respondents foaled no colts while 36.2 percent produced one. A disproportionately large percentage of colts were accounted for by the larger operations.

Location

The thoroughbred industry is concentrated in Maricopa, Pinal, and Gila Counties with slightly over 75 percent of the operations. Pima and Cochise Counties accounted for 15 percent with Coconino and Yavapai at 10 percent. Horse operations in Central and Southern Arizona centered around Phoenix and Tucson. Over 80 percent of the units in Central Arizona were within a 25-mile radius of downtown Phoenix. Similarly, 78 percent of the Southern Arizona operations were within a 25-mile radius of Tucson.

Census

The survey provided a basis to project or estimate the number of thoroughbreds in Arizona by multiplying the number of horses reported by the inverse of the sampling ratio (Chapter II). The overall estimate for 1970 was 1,340 head (Table 5).

The census survey also provided information on the ownership classifications of Arizona thoroughbreds. It was determined that the

Table 4. Thoroughbred Foal Production per Operator, 1970

Classification of Firms	Foals Produced	Percent of Operators	Percent of Foal Crop	Cumulative Percent of Operators	Cumulative Percent of Foal Crop
Small	0	27.5	---	27.5	---
	1	36.2	24.7	63.7	24.7
Medium	2	10.3	15.6	74.0	40.3
	3	5.2	14.2	79.2	54.5
Large	4	6.9	14.0	86.1	68.5
	5	1.9	2.1	88.0	70.6
	6	5.2	10.4	93.2	81.0
	7	1.7	6.1	94.9	87.1
	8	1.7	4.0	96.6	91.1
	9	---	---	96.6	91.1
	10	1.7	4.2	98.3	95.3
	11+	1.7	4.7	100.0	100.0

Table 5. Thoroughbred Population, 1970

Type	Census
Stallions	73
Broodmares	652
Yearlings	251
Foals	264
Miscellaneous	100
Total	1340

Table 6. Ownership Characteristics of the Breeding Industry's Thoroughbred Population, 1970

Thoroughbred Inventory	Classification	
	Breeder-Racers	Breeder
Stallions	48	25
Broodmares	573	79
Yearlings	223	28
Foals	236	28

majority of thoroughbreds were owned by breeder-racing enterprises (Table 6). Additionally, data from the survey also showed that 8 percent of the units held mares in partnership or syndicate, and about 15 percent of the studs fall under multiple ownership. A higher proportion of stud thoroughbreds fall under multiple ownership in the major breeding states. For example, in 1964 only 25 percent of the breeding units in California maintained full ownership of studs.

Arizona stallions provided the primary breeding service for the state's broodmares. Interstate movement of mares for breeding was minor. There were 56 studs offered for commercial breeding with stud fees ranging from $50 to $1,000 per live foal. The average fee was $338.

During the calendar year 1970, 264 foals were produced. The ratio between broodmares and foals was 2.5. A similar statistic, two mares per foal, was reported by the Stanford Research Institute (1965) for California. The broodmare-foal ratio was nearly the same for large and small units.

Economic Structure

Capital Investment

The capital invested in the Arizona thoroughbred breeding industry during 1970 was estimated at 10.7 million dollars. The figure was based on the present values of land, stock, buildings, improvements, and equipment (Table 7).

Land. Land was the largest of the breeding industry's investments, comprising 43 percent of the total. Ordinary irrigated

Table 7. Capital Invested in the Arizona Thoroughbred Breeding Industry, 1970

Category	Investment
Land	$4,500,000
Stock	3,800,000
Building and Improvements	1,360,000
Equipment	970,000
Total	$10,630,000

pasture would be valued at $1,000 per acre, but the land values are due to the fact that most units were concentrated in suburban Phoenix and Tucson areas. Breeders who have had land for the last 10 years might take large capital gains. New operations face high market prices for land.

Land values were characterized by a large variation. Some pasture located in high income residential areas was assessed as high as $20,000 per acre. In contrast, other acreage was as low as $800. When the extreme high and low valuations are omitted, land for suburban horse operations averaged $3,825 per acre for small parcels and $2,550 for large tracts in the Phoenix area. Assessments for Tucson centered at $3,755 for small parcels.

Stock. The 1970 inventory of Arizona thoroughbred stock was estimated at 3.8 million dollars. Stallions accounted for 28 percent of this figure. The range of values placed on stallions was extremely wide, from $3,000 to well over $100,000. A frequency distribution of stallion values is presented in Table 8.

Eighty-five percent of the stallions in the sample were valued at $10,000 or less. The typical value placed on a breeding stallion was $5,272.

Most broodmares were valued between $1,000 and $3,000 (Table 9). The average value over the entire range was $2,740. The average value over the $1,000 to $3,000 range was $1,860 per mare.

Average values for the colt crops of 1969 and 1970 were $2,320 per yearling and $1,470 per foal (Tables 10 and 11). Again, the values

Table 8. Valuation of Thoroughbred Stallions, 1970

Value per Stallion	Percent of Surveyed Population	Cumulative Percent of Surveyed Population
$1,000 - $5,000	64.4	64.4
$5,001 - $10,000	20.6	85.0
$10,001 - $25,000	4.1	89.1
$25,001 - $50,000	4.1	93.2
$50,001 - $100,000	4.1	97.3
$100,000 - over	2.7	100.0

Table 9. Valuation of Thoroughbred Broodmares, 1970[1/]

Value per Mare	Percent of Mare Valuation	Cumulative Percent of Mare Valuation
$ 00 - $ 499	2.4	2.4
500 - 999	6.6	9.0
1,000 - 1,499	27.5	36.5
1,500 - 1,999	20.7	57.2
2,000 - 2,499	13.2	70.4
2,500 - 2,999	10.8	81.2
3,000 - 3,499	.8	82.0
3,500 - 3,999	2.4	84.4
4,000 - 4,499	3.2	87.6
4,500 - 4,999	.8	88.4
5,000 - Over	11.6	100.0

1/ Latest average price per mare at ATBA sale.

Table 10. Valuation of Thoroughbred Yearlings, 1970

Value per Yearling	Percent of Sample Population	Cumulative Percent of Sample Population
$000 - 499	14.3	14.3
500 - 999	10.5	24.8
1000 - 1499	17.0	41.8
1500 - 1999	17.0	58.8
2000 - 2499	10.5	69.3
2500 - 2999	2.9	72.2
3000 - 3499	2.9	75.1
3500 - 3999	1.0	76.1
4000 - 4499	1.0	77.1
4500 - 4999	3.8	80.9
5000 - 5499	4.7	85.6
5500 - 5999	7.6	93.2
6000 - 6499	2.0	95.2
6500 - 6999	1.0	96.2
7000 - Over	3.8	100.0

Table 11. Valuation of Thoroughbred Foals, 1970

Value	Percent of Sampled Population	Cumulative Percent of Sampled Population
0 - 500	16	16
501 - 1000	32	48
1001 - 1500	20	68
1501 - 2000	7	75
2001 - 2500	3	78
2501 - 3000	3	81
3001 - 3500	6	87
3501 - 4000	3	90
4001 - 4500	6	96
4501 - Above	4	100

are characterized by wide variation. Sixty-nine percent of the yearlings assessed below $2,500. The average value of a yearling in this category was $1,487. Approximately 68 percent of the foals were valued at $1,500 or less. The average value of a foal in this group was $915.

The common characteristic of stock values is wide variability. The value distribution were skewed towards high numbers.

Total Investment

Arizona's thoroughbred breeding industry was characterized by farms assessed at less than $45,000 per operation. Approximately 77 percent of the units were in the group. Although small firms were greater in number, 64 percent of the total investment was held by larger operations.

Thoroughbred operations were reclassified into three size groups to develop a manageable picture of the industry. Small operations were defined as 9 head or less, 10 to 19 head was medium, while the large category was 20 head and over. Investments were broken down on a per head basis for each size group in Table 12.

Building and improvement investments increased with the size of unit while land investment per head was nearly constant. Large units usually had stables and/or barns while small units often limited investment to fencing and sun shades. The equipment investments per head decreased as unit size increased.

Costs of Operation

The costs of operating a thoroughbred breeding unit were summarized under the following headings: farm maintenance, horse upkeep

Table 12. Non-Stock Investments Per Head

Size Group	Present Value (1970)			
	Land/Head	Equipment/Head	Building/Head	Total
Capacity (Acres of Land)				
Large	2,720.00	761.92	1,402.81	4,884,73
Medium	2,690.69	769.00	998.00	4,448.69
Small	2,850.72	1,180.34	703.93	4,544.23

and brood-stock expense. Farm maintenance included costs which were linked directly to depreciation, insurance, labor, gasoline, electricity, maintenance, and repair. Horse upkeep expenses were made up of feed, veterinary fees, and blacksmith fees. The brood-stock component is composed of stud fees and depreciation.

Annual costs for the breeding units sampled ranged from $100,000 per firm to $1,600. Variation was due to the wide mixture of type and sizes of units. Expenditures for units with 20 head or over ranged from $32,123 to $106,000. Units with 10 to 20 head ranged from $6,000 to $23,779. Small operations varied from $1,600 to $12,000.

Total costs of operating a thoroughbred unit placed on a per head basis again showed a variation among Arizona farms. Total costs for three units with 7 head each were $700, $1,100, and $1,900 per head. Three units with 16 head had costs of $752, $1,050, and $2,020 per head.

The dispersion in costs over each size group made it seem desirable to develop a general budget as well as budgets for each type animal exclusive of size of operation.

General Budget

The estimate for the basic costs to maintain a thoroughbred in Arizona was $1,096 in 1970 (Tables 13 and 14). The budget is broken down by cost categories.

Labor. Labor costs accounted for $240. Large operations generally incurred a direct out-of-pocket expense for labor. Operations with over 10 head hired from one to six full-time workers at rates from $3,800 to $5,000 per man-year plus bonuses.

Table 13. Thoroughbred Broodmare Budget, 1970.

Category	Cost
Farm Maintenance	
Labor	$240
Maintenance repairs, operating expenses, insurance	199
Depreciation	180
Taxes	63
Subtotal	$682
Horse Upkeep	
Feed	$313
Veterinary	106
Blacksmith	48
Miscellaneous	25
Subtotal	$492
Depreciation	$233
Stud Fees	$338
Total	$1,745

Table 14. Thoroughbred Stallion Budget, 1970.

Category	Cost
Farm Maintenance	
Labor	$240
Maintenance, repairs insurance	199
Depreciation	180
Taxes	63
Subtotal	$682
Horse Upkeep	
Feed	$313
Veterinary	106
Blacksmith	48
Miscellaneous	25
Subtotal	$492
A. Depreciation $5124 stallion	$427
B. Depreciation $35000 stallion	$2,917
Totals A	$1,601
B	$4,091

Small operations seldom hired full-time help, rather they occasionally incurred direct costs for part-time labor. Hourly wage rates for part-time labor centered at $1.25 per hour. As a rule, small operators provided their own labor. It was reasoned that by working on his own operation, an owner lost payment from possible outside employment. It was therefore assumed that the value of the owner's labor was $240 per head per year.

Feed. Feed costs varied from $30 to $961 per head. However, most reports fell within $200 to $450. The average within the latter range was $313 per head.

The problems involved in estimating feed costs included compounding labor with feed costs and ignoring costs of production when animals were fed crops grown in the farm.

Veterinary, Blacksmith Costs, and Stud Fees. Veterinary costs reported in this study reached a high of $670 per head. Again, variability characterized this cost category. An average of $106 was used to reflect standard services such as worming, vaccine shots, broodmare checks and injury treatments.

Blacksmith costs included charges for shoeing and clipping. Most fees were $8 per head for shoeing and $3 per head for clipping. The range of blacksmith costs was small, $16 per head, and $48 was considered representative.

Stud fees averaged $338 per live foal. This fee ranged from $150 to $1,000 in 1970.

Maintenance and Repairs. Costs in this category varied between $12 and $302 per head. The value $199 per head appeared representative. It appeared that these costs were not related to operation size; some units with over 20 head had costs lower than smaller operations.

Boarding Costs. A number of thoroughbreds are boarded in Arizona. Board fees in 1970 started at $1.00 per head per day and reached $3.00 per day. The average was $2.38 per day. Table 15 shows budgets for boarded horses.

Depreciation. Annual depreciation was estimated for farm equipment, vehicles, buildings, fencing, water systems, and miscellaneous equipment. The appropriate depreciation schedules were matched to each investment category (Chapter II). Depreciation costs were found to be a significant expense item. It represented approximately 26 percent of the budgeted costs for farm maintenance.

Taxes. Taxes levied on breeding operations were limited to state and local property taxes. Amounts varied according to the firms appraised full-cash value and the tax rate per $100 assessed valuation. Tax rates average $11.20 per $100 assessed valuation in Phoenix and $12.20 in Tucson. Operations elsewhere had lower rates which averaged $6.20 per $100. Aggregating these rates and the assessed values of Arizona farms, taxes paid to state and local governments averaged $63 per stabled breeding animal.

Miscellaneous Costs. Miscellaneous costs represented advertising charges and taxes on livestock.

Table 15. Thoroughbred Broodmare Budget, Boarding, 1970

Category	Cost
Boarding	$869
Veterinary	106
Blacksmith	48
Miscellaneous	25
Depreciation	233
Stud Fees	338
Total	$1,619

The yearly depreciation for farm equipment, vehicles, buildings, fencing, water systems, and miscellaneous equipment varied from $75 to $558 per head. The typical cost was $181 per head.

Broodmares and stallions were depreciated by the straight-line method over 12 years (Chapter II). Depreciation for breeding stock was arbitrary because of the aforementioned variation in animal values. Broodmares were computed at $2,260. A choice of two depreciations was provided for stallions. Stallions in the first depreciation estimate, "A," were valued at $5,124, while stallions in the "B" estimate were valued at $35,000.

Economics of the Arizona Thoroughbred Breeding Industry

The cash-flow of monies from the thoroughbred breeding industry entering the Arizona economy in 1970 is outlined in Figure 2. An estimated 1.9 million dollars was injected. This flow represents monies paid by breeders for goods and services used to maintain breeding programs.

Direct flows measure only the primary economic impact. There are indirect flows which affect the economy. These forces are characterized by a maze of financial interactions. For example, a feed mill receives payment of a breeder's feed bill. He dispenses these funds among other firms and individuals for services, inventory replacement, taxes, profits and interest. This process continues and the effect of the initial outlay multiplies within the economic structure.

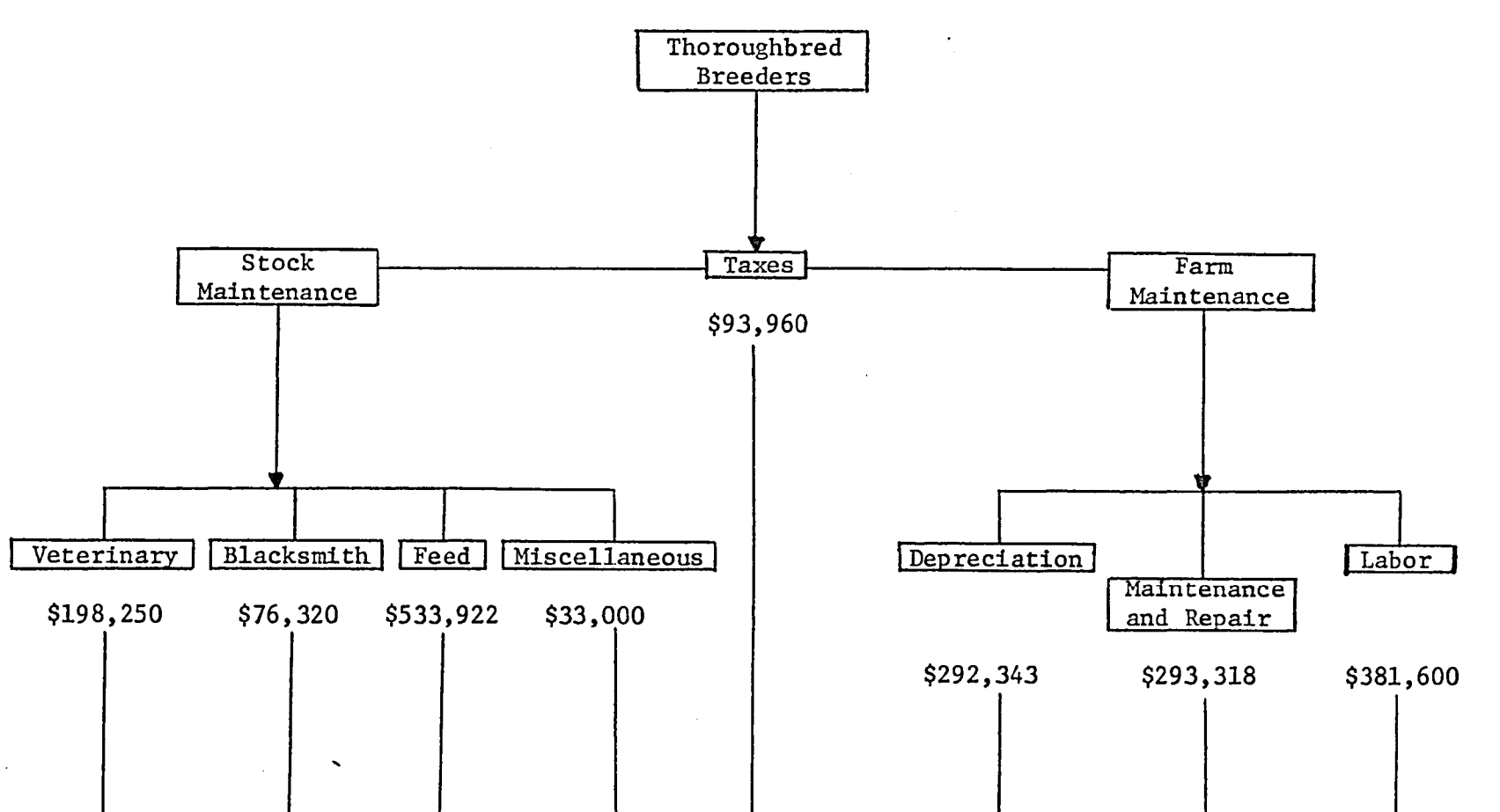

Figure 2. Cash Flow of Expenditures to Maintain and Operate the Arizona Thoroughbred Breeding Industry

Several basic expenditures have not been included in the economic impact figures. They are depreciation of brood-stock, board fees, and stud fees. These outlays measured well over $500,000 in 1970. These outlays do not flow into the economy but circulate among the firms of the thoroughbred breeding industry.

The figures do not include the net balance of monies paid and received between Arizona and other states for breeding services and animals. Information in this area was not obtained.

Estimated flows were computed by multiplying the average expenditures in each category by the number of animals. These figures are not the ones in the budgets. The budgets are modified means. Modified means were computed by eliminating extreme observations in order to present representative figures. It is estimated that racing stock would be kept on breeders' operations for three months of the year. The impact of these animals is included in the flows.

CHAPTER IV

THE THOROUGHBRED RACING STABLE INDUSTRY IN ARIZONA

Structure

The thoroughbred racing stable industry totaled approximately 290 enterprises. The largest segment was composed of operations which bred and raced thoroughbreds, 160 units. These represented 58 percent of the racing stables in Arizona. The remaining 121 operations maintained racing stables, but specialized only in the racing of their stock.

The typical arrangement for racing stock in Arizona was to stable with public trainers. Public trainers prepared 85 percent of the state's racers for competition. Only 43 racing operations operated under a private trainer. These stables generally were operations in which the horse owner was also the trainer. A few of the larger stables hired trainers. It was not uncommon for public trainers to have full or part ownership in racehorses. A number of public stables were composed of racehorses owned by trainers and private parties.

Size of Racing Stables

Arizona racing stables were relatively small. This is illustrated by Tables 16 and 17 which describe the frequency of operations according to the number of racehorses on hand in the fall of 1970.

Table 16. Size Distribution of All Racing Enterprises Based in Arizona, 1970

Stable	Percentile Distribution	Cumulative Distribution
0* head	10.0	10.0
1-2 head	62.7	72.7
3-4 head	11.7	84.4
5-6 head	6.9	91.3
7-8 head	3.8	95.1
9-10 head	2.8	97.9
Over 10 head	2.1	100.0

*Several horsemen classified their units as racing stables even though they had no stock of racing age.

Table 17. Size Distribution of Arizona Based Enterprises which Raced and Bred Thoroughbreds, 1970

Stable	Percentile Distribution	Cumulative Distribution
0* head	16.4	16.4
1-2 head	57.3	73.7
3-4 head	6.9	80.6
5-6 head	6.9	87.5
7-8 head	5.0	92.5
9-10 head	3.8	96.3
Over 10 head	3.7	100.0

*Several horsemen classified their units as racing stables even though they had no stock of racing age.

Seventy-three percent of the stables had no more than two head in training and 95 percent reported fewer than nine racehorses. A few horsemen reported no stock of racing age but still classified their units as racing stables. This was most common for operations which bred and raced stock and were developing foals or yearlings to race.

Although most racing stables were small, 8.7 percent had over six head (Table 18). This group accounted for 30 percent of the racing stock in Arizona. Large racing stables usually bred as well as raced stock.

Public Training Stables. Public racing stables based in Arizona were typically small operations. The size distributions of public stables operating at Turf Paradise Racetrack during the 1970 - 1971 season of Arizona Downs and Turf Paradise, Inc., are shown in Table 16. The typical stable within this group consisted of three to four racehorses.

The public stables at Rillito Racetrack were smaller than those at Turf Paradise. Slightly over 80 percent of the operations at Rillito were in the 1 to 5 head group, compared to 51 percent at Turf Paradise. Proportionately fewer operations were in each of the larger size groups at Rillito than at Turf Paradise.

The size distribution for public stables operating at Prescott Downs during the summer season, June to September 1970, was not obtained. However, general information supplied by public trainers at Rillito Racetrack during the winter of 1971 suggested that the stables at Prescott would be similar in size to those at Rillito Racetrack. Many of the

Table 18. Size Distribution of Public Racing Stables Operating on Arizona Racetracks (June 1970 - June 1971)

Racing Associations	Size of Public Stable					
	1-5 Head	6-10 Head	11-15 Head	16-25 Head	Over 25	Total
S.A.I.L.A. (Rillito Racetrack, Tucson, (January - March 1971)	80.6	13.9	4.8	.7	-	100.0
Arizona Downs, Inc./ Turf Paradise Racetrack, Phoenix; (November 1970 - April 1971)	51.2	25.0	12.2	9.2	2.4	100.0
Prescott Downs, Inc., Prescott Downs Racetrack; Prescott; (June - September 1970)	Unknown					

trainers operating at Rillito managed racing stables at Prescott during the summer racing season of 1970.

Public trainers managing stables at Turf Paradise generally raced the entire November 1970 to April 1971 season. At the close of the meet, the majority of these trainers moved their operations out-of-state. A survey of 22 percent of the trainers at Turf Paradise showed that 80 percent managed out-of-state stables. These operations were usually located in states bordering Arizona: New Mexico, Colorado, Nevada, and California. A few trainers operated in the Midwest and northern Pacific Coast. In contrast, trainers managing public stables at Rillito Racetrack during the winter season of 1971 tended to keep their operations within Arizona. Many of these trainers moved to Prescott Downs and/or raced at a number of the county fair meets.

Economic Structure

Total worth of the racehorse segment was estimated at nearly 5.2 million dollars for the 1970-71 racing year. The major capital item was racing stock which represented approximately 88 percent of the total worth. Racing equipment, land and private stable facilities comprised the remainder of the $624,000.

Investments

Thoroughbred racing stock were sampled in order to arrive at the distribution of the values per head. The valuations ranged from less than $500 to over $75,000 per animal (Table 19). Seventy-two percent of

Table 19. Valuation of Thoroughbred Racing Stock Owned by Arizonans, 1970

Value per Race Horse	Percent of Sampled Race Horse Population	Cumulative Percent of Race Horse Valuation
$ 00 - 499	2.7	2.7
500 - 999	2.1	4.8
1,000 - 1,499	13.7	18.5
1,500 - 1,999	9.8	28.3
2,000 - 2,499	9.3	37.6
2,500 - 2,999	8.7	46.3
3,000 - 3,499	10.4	56.7
3,500 - 3,999	4.8	61.5
4,000 - 4,499	5.5	67.0
4,500 - 4,999	.6	67.6
5,000 - 5,499	12.0	79.6
5,500 - 5,999	.6	80.2
6,000 - 6,499	1.1	81.3
6,500 - 6,999	.6	81.9
7,000 - 7,499	.6	82.5
7,500 - 7,999	2.1	84.6
8,000 - 8,499	1.1	85.7
8,500 - 8,999	.6	86.3
9,000 - 9,499	.6	86.9
9,500 - 9,999	.6	87.5
10,000 -10,499	6.5	94.0
10,500 -above	6.0	100.0

the animals were valued between $1,000 and $5,499. Thus, the distribution is skewed towards high values which implies that there are relatively few horses of extremely high value.

Equipment investment included the values of items such as exercise and racing saddles, stall nets and chains, exercise ponies, feed and water buckets, bridles and shanks. A racing stable with twelve head would have an investment of $1,527 or $127 per head (Table 20). Many racehorse owners minimized equipment investments by utilizing public trainers. Trainers typically supplied the equipment needed to train and race stock as part of their fee.

Land and buildings were difficult to evaluate for the racing stable industry because of problems in dividing breeding and racing. Few operations specialized in racing and maintained facilities expressly for the training of racers. The majority of these units were public stables which owned and maintained private stables for customers. The total investment in this type facility was estimated at $250,000.

Facilities to stable, train and exercise thoroughbreds also were supplied by the major tracks. Stables available for racing stock were as follows: 1,326 at Turf Paradise Racetrack, 325 at Rillito Racetrack, and 425 at Prescott Downs. These accommodations accounted for the highest portions of land and buildings used by the racing industry. The capital costs of this investment was incurred by track operations, defined as separate corporations. They have been excluded as assets of the racing stable industry.

Table 20. Investments for a Racing Stable of 12 Head, 1970

	Item	Number	Cost
A) Tack	Racing Saddles	2	$260
	Riding Saddle	1	225
	Stall Webbs	12	240
	Halters	12	60
	Bridles	5	130
	Water Buckets	12	66
	Stall Chains	12	66
	Feed Tubs	12	120
	Blankets	8	160
B) Exercise Pony			
	Saddle Horse	1	200
	Total Investment Cost		$1,527
	Investment Cost/Head		$ 127

Costs of Racing Thoroughbreds in Arizona

The average cost of racing thoroughbreds on the state's major tracks ranged from $391 per head per month at Turf Paradise Racetrack (Table 21) to $235 at Rillito Racetrack and Prescott Downs (Table 22). These costs were computed from the economic survey of Arizona horsemen. They represent average costs to train and race a thoroughbred for the summer, fall, and winter racing seasons of 1970-71.

Expenditures at the track have been divided into two major categories--general upkeep and costs to start. General upkeep included fees for training, veterinary service, blacksmith and miscellaneous costs. Costs to start include jockey fees and commissions. Costs to start are difficult to budget on a monthly basis because they are dependent on how the horse finishes, the purse size and how often the horse races. Commission paid ranged from 10 to 15 percent of the purse. The costs reported in this section are based on a minimum mount fee plus the estimated commissions paid for the total number of starts during the season at each track. For each start a minimum fee was charged, with a commission due the trainer and jockey for showing, placing, or winning a race.

Costs to Race at Turf Paradise Racetrack (November 1970 - April 1971)

Training fees were the largest single cost to racehorse owners at Turf Paradise Racetrack, Phoenix (Table 22). They varied from $8 to $14 per day per head with an average of $10.

Table 21. Average Expenditures to Race at Arizona Downs (November 1970 - February 1971) and Turf Paradise, Inc., (February 1971 - April 1971) Phoenix

General Upkeep Costs	Cost/Month	
1. Training Fees	$300.00	
2. Veterinary Fees	38.00	
3. Blacksmith Fees	14.00	
4. Miscellaneous Costs	11.00	
	$363.00	
Costs to Start		
1. Jockey Fees (Including expected average commission)	18.90	
2. Commissions (trainer)	9.51	
	$ 28.41	
Total Cost		$391.41

Table 22. Average Expenditures to Race at Prescott Downs, Inc., Prescott (June 1970 - September 1970) and Rillito Racetrack, (January 1971 - March 1971)

General Upkeep Costs	Cost/Month	
1. Training Fees	$180.00	
2. Veterinary Fees	18.00	
3. Blacksmith Fees	12.00	
4. Miscellaneous Costs	4.00	
	$214.00	
Costs per Start		
1. Jockey Fee (Including expected average commission)	$ 15.00	
2. Commissions (trainers) 424 starts - $78,700 (10%)	5.53	
	$ 20.53	
Total Cost		$234.53

The allocation of the training fee by the trainers is presented in Table 23. The training fee in most cases covered the trainer's cost of operation. Thus, a trainer's commissions are a good approximation of his net income. Salaries paid to grooms, handlers, and exercise boys accounted for half the fee with feed and bedding costs the second largest category at approximately 25 percent. The remainder of the fee is allocated to veterinary fees, license, replacement of tack and other miscellaneous expenses.

Veterinary costs were widely variable. Some monthly bills totaled $125 per horse while others were as low as $25. It is risky to predict how each animal's health needs respond to the pressure of racing. However, a representative veterinary costs per month per animal at Turf Paradise Racetrack would be $38.

Blacksmith fees were based on a straight rate of $12 for labor and $5.50 for shoes during the 1970-71 season. Racehorses were shoed every 5 to 6 weeks. Thus the monthly rate would vary from $12 to $14 per horse.

Miscellaneous expenditures to race included insurance premiums, entry fees, nominating fees, and taxes. Not all horsemen incurred all of these. Some owners race horses in the major handicap races, incurring substantial nominating and entry fees. Others race in maiden and claiming races requiring minimal registration costs. Insurance was carried by some owners and not by others. The miscellaneous costs at Turf Paradise Racetrack averaged $11.00 per month.

Table 23. Training Fee Expenditures per Head Per Day (Arizona Downs/ Turf Paradise) Phoenix, Arizona, November 1970 - April 1971

Expenditure Components	Amount
Feed Supplements and Bedding	$ 2.98
Medical Supplies and Tack Replacement	.50
Labor--Grooms and Exercise Boys	4.13
Miscellaneous Expense:	2.39
1. Stall Rentals	
2. Saddle Horse Upkeep	
3. Repair of Miscellaneous Equipment	
4. Licenses	
Total Average Training Fee	$10.00

Costs to Start. Jockey fees charged at Turf Paradise Racetrack were based on a contract between the Jockey's Guild and the Arizona Division of the Horsemens' Benevolent and Protective Association (1969). This agreement guaranteed the rider a fee of $20 per mount or 10 percent of the purse if he wins (Table 24). Finishing second earns the jockey $30, third $25 and fourth, $20.

Commissions paid trainers vary with the size of the purse. The typical rate paid for a win ranged between 10 and 15 percent of the monies paid for first place. The expected total of the commissions paid to the jockey and the trainer for one start at Turf Paradise 1970-71 averaged $28.41. This figure is derived by dividing the total purse money by the number of races for the season and then dividing by the number of horses per race. It is assumed that each horse has the same probability of winning. This commission and fee can be placed on a monthly basis by assuming that a horse starts once every six weeks or five or six starts per season.

Costs to Race at Rillito Racetrack, Tucson (January 1971 - March 1971

The monthly costs to train and race a horse at Rillito Racetrack were similar to those at Turf Paradise, but at a lower level (Table 21). The training fee remained in the largest single expenditure cost, ranging from $125 per month per head to a high of $250. The representative training cost appeared to be $180 per month.

Table 24. Mount Fees (Turf Paradise/Arizona Downs) November 1970 - April 1971

Finishing of Racer	Percentage of Purse as Winnings	Mount Fee
1st	60%	10% of purse
2nd	20%	$30/mount
3rd	10%	$25/mount
4th	5%	$20/mount
Other	—	$20/mount

The remaining upkeep costs, veterinary fees, blacksmith fees and miscellaneous costs totaled $34 per month. Again, each expenditure in each category was below those at Turf Paradise.

Costs to Start. Expenditures for jockey fees at Rillito were about $15 per month for purses under $400 and $19 per month for purses from $400 to $600. These rates were standard for the 1971 winter season.

Estimation of typical commissions paid was difficult at Rillito. Owners often trained their own stock and paid no commissions.

Trainers specializing in public stables did not utilize a set commission policy. Some trainers used the common 10 percent of the price money. If one assumes a 10 percent commission for trainers, the cost per start is $5.53 per horse.

Total Expenditures at Arizona Downs/ Turf Paradise, Inc., (November 1970 - April 1971)

Arizona Downs, Incorporated and Turf Paradise, Incorporated sponsored 87 days of racing at the Turf Paradise Racetrack in Phoenix, Arizona. During the November to April racing calendar, approximately 7,820 horses ran in 920 races. It was estimated that during a typical week at the track about 1,600 head were being groomed and trained to race.

The total costs for these meets are summarized in Figure 3. These monies were paid to trainers, jockeys, veterinarians, blacksmiths, vanning firms, tack and medicine shops, licenses, nominating and entry tariffs and other sundry items.

Cash expenditures for labor and professional services accounted for the highest proportion of costs at Turf Paradise. Expenditures for

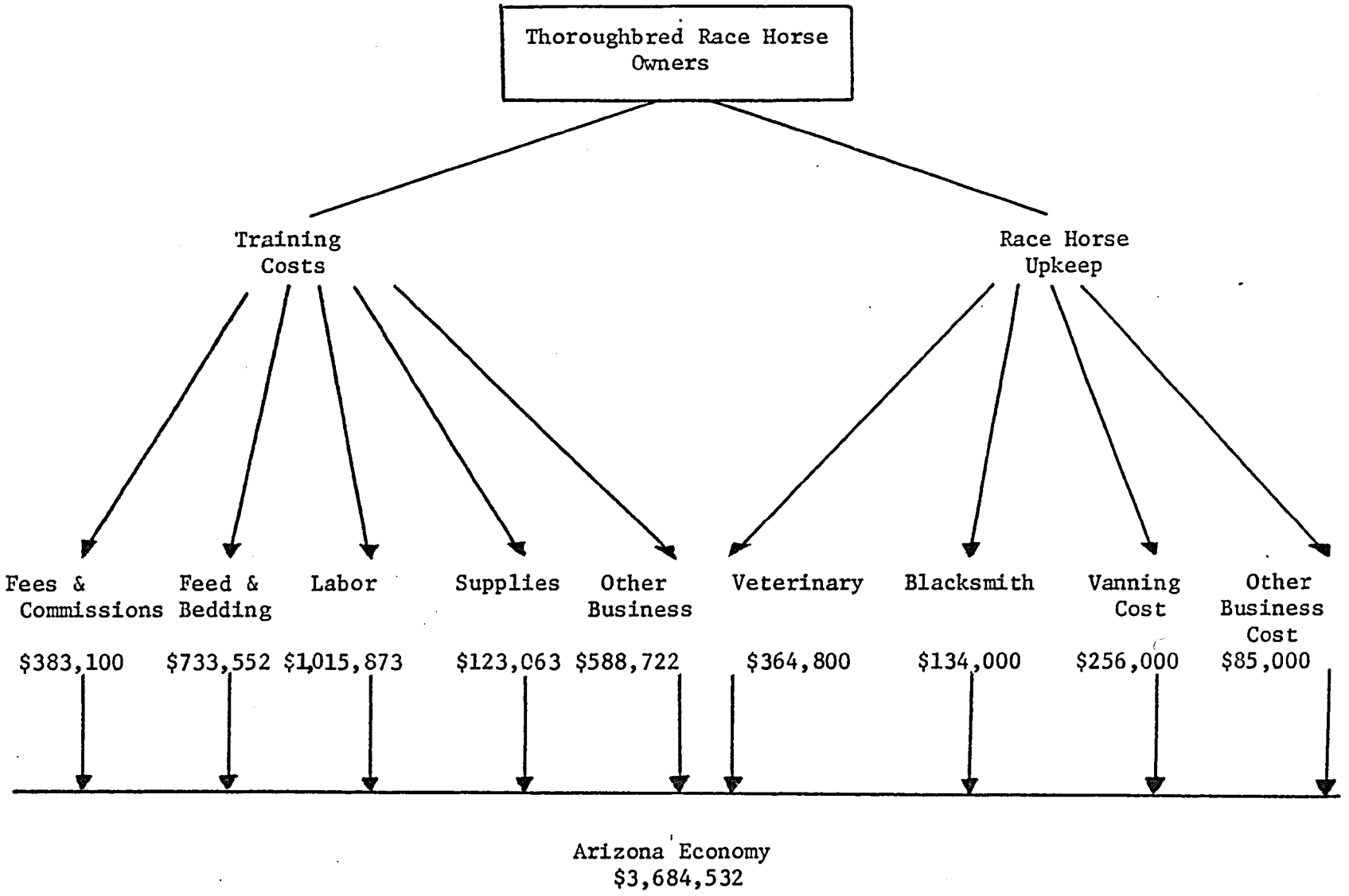

Figure 3. Total Cash Expenditures at Turf Paradise Racetrack, Phoenix, (Arizona Downs/Turf Paradise, Inc., November 1970 to April 1971).

feed, bedding and supplies measured $856,615, followed by other business costs at $673,794, and vanning costs at $265,000.

Total Expenditures at Rillito Racetrack, Southern Arizona International Livestock Association, (January 1971 - March 1971)

A calendar of 22 racing days was scheduled for the January 12 to March 24 season at Rillito Racetrack in Tucson. This schedule was divided into 18 commercial racing days and four county fair racing days. The combined programs totaled 178 races in which approximately 145 thoroughbred competed in 105 races while 657 quarterhorses ran in the remaining 73 races.

The population of registered horses at the track averaged 540 head. This census included thoroughbreds as well as quarterhorses. Costs to train this entire stable of racers for the Rillito season measured $347,984. These monies purchased goods and services needed to maintain the racing stock at the track. The expense items for the season are categorized in Table 25.

Characteristic of racing expenditures, labor was the largest item. As described in the racing expenditures at Turf Paradise, the remaining costs were divided similarly among the purchase of goods and miscellaneous items and services.

Total Expenditures at Prescott Downs, Prescott (June 1970 - September 1970)

Costs to race thoroughbreds and quarterhorses at Prescott Downs were not investigated separately. It was hypothesized that expenditures

Table 25. Total Cash Expenditures to Race at Rillito Racetrack, Tucson, (January - March 1971)

1.	Training Fees	$243,000
2.	Jockey Fees ($15/mount)	21,360
3.	Veterinary Fees	24,300
4.	Blacksmith Fees	19,440
5.	Vanning Costs	22,680
6.	Other Business Costs (Taxes, Insurance, Licenses, Commissions)	17,204
	Total	$347,984

at Prescott paralleled those at Rillito. Trainers stabling expressed the opinion that costs were similar at both meets.

Horse racing was scheduled for the summer season of 1970 under the auspices of Prescott Downs, Inc., and the Yavapai County Fair Association. The fair meet consisted of five days of racing while the remainder were commercial racing dates. These two racing schedules totaled approximately 313 races. Approximately 213 thoroughbred races were run with 72 quarterhorses and 28 combination quarterhorse and thoroughbred races completing the racing program. It was estimated that about 1,000 thoroughbreds and 200 quarterhorses entered the racing field. Of these entries, approximately 80 percent of the thoroughbreds and 95 percent of the quarterhorses were owned by Arizona residents.

Examination of the weekend racing programs revealed a racing ratio of 4.2 starts per entry. The majority of these entries trained at the track about two weeks before each start.

The population of racehorses registered and stabled at or about the Prescott Downs Track was not available to the University. An approximation was obtained from the racing information published by the Prescott papers. The racing programs listed 1,200 different horses. Based on an average training period of nine weeks for a thirteen week season, the turnover at the track was 1.45. This implies that an average of 827 horses were stabled at the track.

The costs to maintain 827 head at the Prescott season was simulated from the cost to prepare a horse to race at Rillito. The total cash flow estimate neared $796,400 for the May-September 1970 racing meet.

Estimated Total Expenditures at Major Arizona Racetracks

The economic impact of racing expenditures at the three major racetracks in Arizona totaled 4.85 million dollars. The largest segment of this cash flow was composed of monies paid by horsemen who raced at Turf Paradise. This outlay measured 3.7 million dollars. Total expenditures at Rillito Racetrack approached $350,000 for the winter racing calendar of 1970-71, and during the summer racing season of 1970 at Prescott Downs approximately $796,000 was spend by horsemen at this track.

CHAPTER V

SUMMARY AND COMPARISONS

Pari-mutuel thoroughbred racing in Arizona is an enterprise composed of three interdependent sectors. These sectors are the breeding programs of Arizona thoroughbred farms, the operation of racing stables to prepare and groom stock for competitive racing, and the sponsorship of pari-mutuel racing by licensed racing associations.

Results of this study showed that the thoroughbred breeding industry of Arizona is characterized by a multitude of small breeding operations. Typical farms in the state maintained breeding stables which seldom numbered over 5 head. Only 15 percent of Arizona farms maintained larger inventories of brood-stock. Capital investments in land, facilities, and equipment of Arizona breeding enterprises averaged approximately $45,000 per farm in 1970. Although a number of farms greatly exceeded capital investments of $45,000, this figure represented the upper investment level of 77 percent of the farms operating in the state.

Values of Arizona broodmares generally ranged from $2,000 to $5,000 per head, with an average value of $2,521. Valuations of Arizona stallions, however, showed greater variation. Valuations ranged from $5,000 per head to values exceeding $75,000 per head. Upkeep of these

inventories of brood-stock averaged $1,745 per head in 1970. This figure represents all expenditures for upkeep of the animal and the maintenance of the breeding farm facilities.

The thoroughbred racehorse stable industry in Arizona is composed primarily of racing stables of 5 to 10 head. Stables in this category made investments in tack and equipment averaging approximately $127 per head in 1970. The value of Arizona racehorses competing on the state's racetracks average $3,127 per head. The primary range of values fell between $1,000 and $5,000 per head. Costs of upkeep at the major racetrack in Phoenix averaged $363 per head per month in 1970. Upkeep costs at the smaller racetracks at Tucson and Prescott averaged $212 per month per horse.

The capital demands to maintain and operate the thoroughbred breeding and racing stable industries of Arizona play a significant role in the economic contribution of pari-mutuel racing to the state. Capital investments and expenditures of the state's breeding and racing stable enterprises are principal economic contributors to the local economy. For 1970 these economic indicators totaled 15.8 million dollars in capital investments and 5.58 million dollars in expenditures. These figures compare favorably to economic impact indicators of other recreational orientated industries.

Results of a study, The Participation and Expenditures for Hunting, Fishing and General Rural Outdoor Recreation in Arizona, (Gum, Martin, Smith, and Depping, August, 1973), showed expenditures by Arizonans to

participate in various forms of hunting and fishing, ranged between $620,000 and 14 million. Cold water fishing represented the largest single expenditure of these outdoor activities. Expenditures for warm water fishing and big game hunting were estimated at $9,357,156 and $7,162,311 in 1970. Completing the listing of expenditures for other outdoor activities were waterfowl hunting, estimated at $620,608 and general hunting at $1,265,687.

Economics of Thoroughbred Racehorse Industries in Other States

Horse racing in the border State of California is a popular spectator sport. There are 5 major racetracks (Bay Meadows, Golden Gate Fields, Santa Anita, Hollywood Park and Del Mar) in operation in which 6 Racing Associations sponsor approximately 210 days of thoroughbred racing. This market for thoroughbred horse racing stimulated the development of a large thoroughbred racehorse breeding and racing stable industry in California. It ranks as one of the two largest thoroughbred racehorse industries in the country. In 1964, capital investments in the state's breeding and racing stable industries was estimated at $103,000,000 to $138,000,000 by the Stanford Research Institute (1965).

Results of the S.R.I. study showed that the economic structure of the California thoroughbred racehorse breeding industry was composed primarily of breeding farms whose total capital investments fell below $81,000. Approximately 73 percent of the farms in operation were valued below this $81,000 level. In 1964, typical investment to maintain broodstock in California averaged about $20,000 per broodmare.

Each of these investment levels was substantially higher than the investment parameters characterizing the thoroughbred industry in Arizona. The cost of broodmare upkeep was also higher in California. The cost of upkeep in California averaged $2,496 per head in 1964. Total capital investment in California's breeding industry was estimated to range between $72,000,000 and $92,000,000, approximately 7 to 9 times higher than the estimated total investment level of Arizona thoroughbred breeding farms. Total expenditures for stock and farm upkeep in California reached approximately 11.5 million dollars in 1964, again substantially higher than Arizona expenditure levels of 1970.

The investment structure of the racing stable industry in 1964 was characterized by racehorse stables which averaged $49,000 in capital investments. The median investment in land, equipment and facilities, however, measured $15,000.

Costs of upkeep at the 5 major racehorse tracks at California in 1964 averaged $500 per month per racehorse stabled on the racetrack grounds. This cost was composed of $380 per month for training fees and $120 per month for veterinary, blacksmith, vitamin supplements, and miscellaneous fees. An additional $72 to $94 was the cost to enter and race a thoroughbred at the track. In total the expenditures paid to operate California's racing stables reached 8.89 million dollars in 1964. This total surpassed the estimated 1970 gross expenditures of the Arizona racing stable industry by 5.03 million dollars.

Thoroughbred racing has been an important element to the economy, tradition, and history of the Commonwealth of Kentucky. Horse racing

since the early 1800's has been vigorously supported by Kentucky racing fans. This popularity in racing is shown yearly by the high attendance and large pari-mutuel handles at Kentucky Racetracks. Attendance at Kentucky's four thoroughbred racetracks (Churchill Downs, Miles Park, Latonia, James C. Ellis Park) Spindletop Research (1971), Lexington, Kentucky reached 1,389,000 for 220 days of racing. The gross pari-mutuel handle during this 1968 racing season was 95.5 million dollars, and the pari-mutuel tax paid to the state treasury from this handle totaled approximately 4.14 million dollars.

The thoroughbred breeding industry of Kentucky is the primary producer of the quality stock which race on the state's four major thoroughbred racetracks. The annual yearling sales in Kentucky handle thousands of racing colts. Prices paid by racing stable enterprises for these crops run into the millions of dollars. The yearling sale of 1968, for example, handled approximately 3,533 head which grossed a revenue of over 27 million dollars. The average sale price was $7,682 per head, the highest 1968 market value registered for a crop of yearlings among the thoroughbred breeding areas of the country.

The costs to breed thoroughbred stock represents a significant economic impact on the economy of Kentucky. Capital investments in breeding stock and breeding farms are substantial. The economic impact recorded by Spindletop Research totaled over 22.5 million dollars in 1968. This cash flow was also supplemented by the costs to train and race thoroughbred colts at the racetrack. The racing stables of Kentucky added an additional 11.3 million dollars to the flow of monies

entering the local business sectors. The total of 33.8 million dollars ranks the Kentucky thoroughbred racing industry as the largest single contributor among the thoroughbred racing industries of the country to the national economy.

In contrast to the established racehorse industries of California and Kentucky, New Mexico represents a region in which thoroughbred racing is in a stage of development. Recreational riding and quarterhorse racing currently compose the primary sectors of the horse industry in New Mexico.

Information compiled on the horse racing sector by the Bureau of Business Research (1970), The University of New Mexico in its publication, A Study of the Economic Impact of the Horse Industry in New Mexico, estimated the economic contribution of the thoroughbred breeding industry of the state was approximately $265 per head. Investments in breeding stock, facilities, equipment, and other items excluding land to maintain breeding operations averaged 1,700 per head in 1968. These economic figures are substantially lower than the 1970 investment parameters of Arizona breeding farms.

The economic impact of the racing stable operations in the state was placed at $50 per day during the racing season. This expenditure was a measure of upkeep and racing costs of stock at racetrack as well as expense money for room and board for the trainer or racehorse owner.

Sunland Park, La Mesa Park, and Ruidoso Downs, the three major racetracks in the State of New Mexico, were valued at approximately 7.6 million dollars. Each of these racetracks sponsored thoroughbred and quarterhorse racing during the 1968 racing season. The total racing

programs of these tracks made a significant economic contribution to the state. Wages paid in 1968 totaled 1.3 million dollars and tax revenues paid to the state treasury reached $750,000. Payments of racing purses to horsemen were over 2.6 million dollars and operating expenses during the 1968 season was about one million dollars. In total, the monies paid by the racing association in sponsoring pari-mutuel horse racing in New Mexico approached 6 million dollars.

APPENDIX A

QUESTIONNAIRES

ARIZONA HORSE CENSUS 1970

No. _____

Instructions: (Please check the categories in which you fall.)

1. Are you an Arizona resident? Yes ___ No ___

2. Are you a breeder ___ owner ___ trainer ___ all three ___

3. Do you deal with quarterhorses ___ thoroughbreds ___ both ___

4. Do you race your stock? Yes ___ No ___

   Do you race in Arizona ___ other states ___ both ___

5. Is your stock maintained in Arizona on facilities which you

   own ___ lease ___ rent (board) ___

6. Please estimate the value of your stock which you maintain in Arizona for at least six months per year.

	Number	Est. Total Value
a. Number and estimated value of stallions owned.	_____	_____
b. Number and estimated value of broodmares owned.	_____	_____
c. Number and estimated value of foals of 1969 owned.	_____	_____
d. Estimate number and value of foals on hand or expected in 1970.	_____	_____
e. Number and estimated value of foals of 1968 and older not racing.	_____	_____
f. Number and estimated value of racing stock owned and racing in your name.	_____	_____

ECONOMIC QUESTIONNAIRE

I. OPERATIONAL DESCRIPTION

A. Is your ranch operated primarily for horse breeding? Yes ___

No ___

B. If no, please describe your operation _____

_____

_____

II. OPERATIONAL INVESTMENT

(Please fill in the appropriate data which describes your ranch operation.)

A. Land	Number	Acreage	Fencing Material	Est. Value
1. Permanent Pasture	_____	_____	_____	_____
2. Paddocks	_____	_____	_____	_____

B. Buildings	Number	Total No. Stalls	Construction Material	Est. Value
1. Barns	_____	_____	_____	_____
2. Stables	_____	_____	_____	_____
3. Sheds	_____	_____	_____	_____
4. Other	_____	_____	_____	_____

C. Equipment	Number	Type(s)	Year	Est. Value
1. Vans				
2. Trailers				
3. Disk				
4. Drag				
5. Spreader				
6. Harrow				
7. Sower				
8. Walker				
9. _____				
10. _____				

D. Equipment (Vehicles)	Number	Model(s)	Year	Est. Value
1. Tractors				
2. Pickups				

E. Are these vehicles used for your horse operation?

	Pickup	Tractor
0 -1/4 time	___	___
1/4-1/2 time	___	___
1/2-3/4 time	___	___
3/4-full-time	___	___

F. What is the value of the tack and veterinary equipment used on your horse operation? (bridles, saddles, bandages, oils, etc.)

Estimated value $ _____

G. What is the value of your miscellaneous equipment? (clippers, hand tools, etc.)

Estimated value $ _____

H. Miscellaneous investments

1. Equine library Estimated value $ _____

2. Other _____ $ _____

III. OPERATION EXPENSES FOR 1970

A. Labor	No. Employed	Employment Period	Salary Payment
1. Part-time workers	_____	_____	_____
2. Full-time workers	_____	_____	_____

3. What percentage of the working week do your full-time employees work on your horse operation?

0-25%	25-50%	50-75%	75-100%
___	___	___	___

4. Do you furnish your full-time workers:

Room	Board	Utilities
___	___	___

B. Utilities

1. What is the monthly utilities expense for your ranch operation? (electricity, auto-gasoline, etc.)

Estimated value $_____

C. Maintenance and Repairs

1. Please estimate your ranch maintenance costs for 1970. (fencing, hiring of equipment, etc.)

Estimated value $_____

2. What was your annual expense in 1970 for the replacement of tuck and veterinary equipment? (bridles, shanks, bandages, oils, etc.)

Estimated value $_____

D. Taxes

1. What was your property tax for the last fiscal year?

$_____

IV. OPERATIONAL INCOMES

A. Boarding

1. Do you board breeding and racing stock on your facilities? Yes_____

No_____

2. What is your board fee per horse per day? $_____

3. How many head did you board in 1970? $_____

4. What was the average stay of a boarded horse in your facilities?

_____
Time Period

V. EQUINE EXPENSES

A. Maintenance

1. What was your operation's annual expense for maintaining stock not in training (broodmares, weanlings, studs, resting stock)?

Hay $_____

Horse feed & Supplements $_____

Blacksmith $_____

Vet. Fees $_____

Nominating Fees $_____

Stock Insurance $_____

Stock Advertising $_____

2. Who are the hay and feed distributors? _____

_____

_____

_____

B. Breeding

1. How many mares did you breed during 1970? _____

2. How many mares did you send out to be bred? _____

3. Where were these mares bred? State _____

_____

_____

4. On the average how long were these mares boarded before returning to your facilities? _____

5. Please approximate the cost of boarding your mares for 1970. $ _____

6. Please approximate the stud fee expense for 1970. $ _____

7. What was the expense of transporting your mares by van? $_____

8. Please identify the vanning service used to transport your mares.

_____

_____

C. Racing

1. How many horses have you had in training this year? _____

2. Please estimate the training period of those race horses.

Name	Training Period
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

3. How long was your racing stock out of state this year?

Name	State	Training Period
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

4. Please approximate your average monthly expense for maintaining your racing stock on Arizona racing facilities.

   Veterinary fees $_____

   Blacksmith $_____

   Insurance $_____

5. Please estimate your vanning cost to transport your racing stock.

   $_____

6. Please identify the vanning service which you used to transport your stock.

   Names

   _____

   _____

   _____

   _____

7. What is the training fee per day per horse you pay in Arizona

   $_____

8. Do you train your stock? If yes, please see D.

   Yes_____

   No_____

D. Trainers

1. On the average how many horses do you have in training at your stables for the Arizona racing season?

Number of head_____

2. How many horses do you have in your stable when you race out of state?

Number of head_____

3. What do you estimate is the daily expense to feed one race horse in training in Arizona?

Cost per day _____

4. Where do you purchase your feed? Name

_____

_____

_____

5. What is your monthly replacement expense for tack and veterinary equipment at the track (bridles, shanks, bandages, oils, etc.)?

Expenses $_____

6. During the Arizona racing season how many grooms do you employ for your racing stable?

No. of Grooms _____

7. What is the weekly salary per groom? $_____

8. How much do you spend for gallop boys per week? $_____

MAIL QUESTIONNAIRE

1. How much land is used to maintain your stock? _____ Number of acres

2. What type of buildings are used for the maintenance of your stock?

Stables ____

Barns ____

Sheds ____

Other ____

None ____

2b. How many stalls are constructed in your stable or barn? _____ Number of stalls

3. What is the value of your tack? (halters, shanks, bridles, saddles, etc.) $_____ Estimated value

4. What is the value of your veterinary equipment? (syringes, leg braces, bandages, etc.) $_____ Estimated value

5. What is the value of your miscellaneous equipment? (grooming equipment, clippers, much baskets, etc.) $_____ Estimated value

6. Please approximate your horse breeding operations: maintenance (exclude labor, paint, fencing, etc.) $ _____ Approximately

7. How many trailers or vans do you own? _____ Number trailers

Trailer capacity for carrying stock _____

Age of trailers _____

8. Do you employ part-time workers? Yes ___

No ___

8b. How many part-time employees have you hired in 1970?

Number of workers _____

Average length of employment _____

Salary per month per part-time worker _____

9. Do you employ full-time workers Yes ___

No ___

9b. How many full-time workers do you employ?

Number of workers _____

Salary per month per worker _____

10. Please approximate your monthly expenses for maintaining your stock.

Feed $_____

Blacksmith $_____

Veterinary $_____

11. Is the feed produced in Arizona?

Yes ___

No ___

12. Please approximate your expenses per year for

Livestock insurance $_____

Livestock advertising $_____

Nominating fees $_____

13. Do you ship your broodmares out of state to be bred?

Yes ___

No ___

14. Please name the states where your broodmares were bred.

_____

_____

_____

_____

15. How many mares have you sent out of state? _____

16. Approximately how long were the broodmare (s) out of state?

_____

_____

17. Please approximate the cost per month for maintaining your mare out of state.

$_____

18. Did you hire a vanning service to transport your mares?

Yes _____

No _____

19. Please identify the service.

Name _____

20. What was the vanning expense? $_____

21. How many horses are in training or will be in training?

Number head _____

22. Do you train your own stock?

Yes ___

No ___

23. Please estimate the time period which your horses will be in training.

Name	Training Period
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

24. Do you hire a vanning service to transport your stock?

Yes ___

No ___

25. What is the name of the vanning service?

_____

_____

_____

26. Please approximate the vanning expenses of your racing stock since January 1, 1970. $_____

27. What are your training fees per week per horse?

Fee $_____

28. Approximately how many months will your racing stock be out of state?

	Name	State	Time Period Out of State
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

29. Please approximate your veterinary fees per month for your stock in training.

Veterinary fees per month $_____

30. Please approximate your blacksmith expenses per month for your stock in training.

Blacksmith expenses $_____

31. What is your racing livestock insurance expense?

Insurance Costs $_____

32. Do you travel to watch your stock race?

Yes ____

No ____

33. How many days do you spend away from your home watching your stock race?

Days _____

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